

Handwritten mark



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,940	04/20/2001	Ronald Dean Watkins	RD-29,211	4093

6147 7590 03/26/2004

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
SCHENECTADY, NY 12301-0008

EXAMINER

VARGAS, DIXOMARA

ART UNIT PAPER NUMBER

2859

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,940

Applicant(s)

WATKINS ET AL.

Examiner

Dixomara Vargas

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13 and 15-17 is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 3, 5-8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujita et al (US 6,169,401).

With respect to claim 1, Fujita discloses a whole-body radio frequency coil assembly for a very high field MRI system comprising (Figure 3): a plurality of conductors arranged cylindrically and disposed about a patient bore tube of the MRI system (Figure 1), said conductors having a width selected for said RF coil assembly to resonate at substantially high frequencies and to minimize conductor inductance (Columns 4 and 5, lines 57-67 and 1-9; Figure 3); and, a plurality of capacitive elements for electrically interconnecting said plurality of conductors at respective ends of said conductors (Figure 3), wherein said conductors and capacitive elements form a conductive loop for producing an RF field in the MRI system for imaging (Figures 3 and 4).

3. With respect to claim 3, Fujita discloses said substantially high frequencies occurs in a range between about 64 MHz to about 500 MHz (Column 4, lines 19-40).

Art Unit: 2859

4. With respect to claim 5, Fujita discloses said very high field MRI system produces a magnetic field of about 3 Tesla (Column 4, lines 19-39).
5. With respect to claim 6, Fujita discloses said plurality of conductors have a selectable length (Columns 4 and 5, lines 57-67 and 1-9; Figure 3).
6. With respect to claim 7, Fujita discloses said selectable length is about 55cm (Columns 4 and 5, lines 57-67 and 1-9; Figure 3).
7. With respect to claim 8, Fujita discloses said capacitive elements are low inductance end ring capacitors (Column 5, lines 3-9; Figures 3 and 4).
8. With respect to claim 10, Fujita discloses a plurality of gaps disposed between said conductors (Figures 3-4).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al (US 6,169,401) in view of Eberler et al. (US 6,323,548).

With respect to claim 9, Fujita discloses the claimed invention as stated above in paragraph 2 except for the conductors further include segmented slots for reducing eddy currents induced by gradient coils of said MRI system. However, Eberler discloses RF conductors with segmented slots for reducing eddy currents induced by gradient coils of said MRI system

Art Unit: 2859

(Column 2, lines 10-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Eberler's slots for reducing eddy currents in Fujita's radio frequency coil assembly for the purpose of improving the image quality by enhancing the current density distribution of the system and avoiding the eddy current from affecting the other components of the apparatus.

Allowable Subject Matter

11. Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

- a. With respect to claim 2, the claim has been found allowable over the prior art because the prior art fails to teach or fairly suggest a whole-body radio frequency coil assembly for a very high field MRI system comprising: conductors wherein the width of the conductors is selected in accordance with: $W_{\max} = 2\pi * A/N$ where W_{\max} is the maximum width, A is the outer diameter radius of said patient bore tube and N is the number of said conductors in combination with the remaining limitations of the claim.
- b. With respect to claim 4, the claim has been found allowable due to its dependency on claim 2 above.

13. Claims 11-17 are allowed.

14. The following is an examiner's statement of reasons for allowance:

Art Unit: 2859

c. With respect to claim 11, the claim has been found allowable over the prior art because the prior art fails to teach or fairly suggest a very high field MRI system comprising: a RF coil shield assembly adapted to further reduce the inductance of the conductors contained within the RF coil assembly in combination with the remaining limitations of the claim.

d. With respect to claims 12-17, the claims have been found allowable due to its dependency on claim 11 above

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

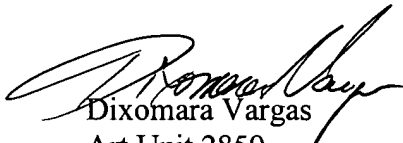
15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited in the PTO 892 discloses different birdcage coil with width variation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (571) 272-2252. The examiner can normally be reached on 8:00 am. to 4:30 pm..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2859

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dixomara Vargas
Art Unit 2859
March 17, 2004



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800